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**Title**

Financing large-scale offshore wind farms

**Topic/subtopic**

Business and market: Finance and insurance

**Abstract**

EKF has positioned itself as one of the top players in providing financial guarantees for wind farms world wide. Through our involvement in wind energy projects we have gained extensive experience, and we continuously seek to develop new financial solutions together with other financial institutions, sponsors and investors.

From a lender's point of view, onshore and offshore wind farms are characterised by the same fundamental risks affecting their rating and thereby their bankability. Due to the characteristics of offshore wind farms (size of investment, technological challenges etc.) both the likelihood of risks occurring and the impact of risk events are, however, considerably higher.

In spite of increased risk, offshore is the new frontier for the wind industry.

The funding requirement for future offshore projects will run into billions of Euros. Therefore, financing will play an important role in the implementation of offshore wind energy plans - in Europe and elsewhere.

Adherence to balance sheet financing - which has been prevalent so far - is likely to slow down offshore development, i.e. alternative financial solutions are needed.

The paper will discuss how to make offshore wind projects eligible for non-recourse or limited recourse project finance structures. Special attention will be given to risk mitigation. A key concern is the financial burden characterising many suppliers due to their continuous provision of large contract bonds and corporate guarantees.

## Introduction

The offshore world market is expected to grow rapidly in the years to come. Eight European nations with specific offshore plans aim for more than 50 GW of total capacity within 25 years. Some of the largest parks are planned off the Baltic and North Sea coasts of Germany and the UK [1][2].

Up to now, European offshore wind has, however, been happening at a slower pace than expected. In 2004, a modest 60 MW of offshore capacity was installed (the Scroby Sands project) [3]. But even if the above plans turn out to be overly optimistic, an extensive pipeline of projects can be foreseen for the years to come.

It is currently more expensive to build wind farms at sea. Capital costs of the first two offshore wind farms in Britain – North Hoyle and Scroby Sands – amounted to EUR 1.8 million per MW which is roughly twice the cost of onshore wind [4]. The higher costs result from expensive foundations, marine based construction conditions and undersea cabling etc. While capable of building onshore wind farms on time and on budget, the industry has to take the additional variability of the weather into account when going offshore [5].

The size of each offshore wind farm will be at least 100 MW, and some of the projects being planned envisage total capacities of more than 1,000 MW. At the above costs considerable sums are to be raised during the coming years. Therefore, finance has become a critical part of the equation.

For industrial sponsors (such as utilities) balance sheet financing is the easiest and cheapest way to obtain funding. In the course of time, adherence to balance sheet financing is, however, likely to slow down offshore development. As equity becomes scarce, other structures - such as project finance - will be needed.

A shift to project finance will entail a number of challenges: From a financier's point of view, onshore and offshore wind farms are characterised by the same fundamental risk categories affecting their rating and thereby their bankability. Due to the characteristics of offshore wind farms (size of investment, technological challenges and lack of experience etc.) both the likelihood of risks occurring and the impact of risk events are, however, likely to be considerably higher.

In spite of increased risk and lack of experience, offshore is the new frontier for the wind industry. It is therefore highly relevant to discuss how to make offshore wind projects eligible for project finance.

EKF is involved in some of the first offshore wind farms to be project financed. When pioneering, one gains experience - and we would like to share part of this experience with other industry players.

## Scope of paper

The focus of the paper is offshore wind farms - and the challenges they present to the wind turbine industry and the financial community. Special attention is given to completion risk which is one of the risk categories of utmost concern to project financiers.

The overall aim is to raise and discuss the following questions:

- How to make offshore wind projects eligible for project finance?
- To what extent can offshore completion risk be mitigated – by way of risk sharing between the parties involved in a project?
- What are the possibilities of obtaining insurance cover for offshore wind farms?
- How is the financial community likely to deal with unmitigated risk?

## **Completion risk**

Completion risk is one of the key concerns in any project yet to be built. The focus on completion risk is only natural, since no project financier is interested in funding a deal which cannot be expected to be completed on time and on budget.

The offshore construction process is much more complicated than it is the case for onshore projects. Offshore wind farms require strong foundations (lodged in the sea bed) and many kilometres of cabling. Construction has to be carried out in reasonable weather using specialist boats and equipment. All in all, the risk of completion delay and cost overruns is therefore considerable [6].

In order to make offshore wind farms eligible for project finance, it is necessary to consider how to mitigate completion risk, i.e. how to share the risk among the parties involved.

In the following paragraphs two ways of mitigating risks will be discussed:

- Sponsor support
- Contractual commitments

Furthermore, a number of central questions regarding the possibilities of obtaining insurance cover for offshore wind farms will be raised.

## **Sponsor support**

For offshore wind farms, non-recourse project financing is not available at the moment. Instead, a limited recourse structure is to be negotiated, including a requirement for sponsor involvement through a cost overrun commitment or a completion guarantee.

When assessing the availability and value of risk mitigation through sponsor commitment it is important to distinguish between different kinds of sponsors, such as industrial sponsors (e.g. utilities) and private limited partnerships.

Industrial sponsors with experience from the (wind) energy sector are able to play a significant role in the process of constructing and operating an offshore wind farm. Instead of entering into a turnkey contract with a turbine manufacturer, this type of sponsor might choose to take on turnkey responsibility himself while engaging with a number of sub-contractors for the supply and erection of turbines etc. ('multi-contracting').

In general, the involvement of an industrial sponsor in an offshore project is heavily appreciated by prospective lenders. An industrial sponsor provides comfort in the form of knowledge and experience. Furthermore, industrial sponsors are able to take part in the risk sharing, especially during construction.

Experience shows that utilities and other industrial sponsors have financed the first offshore wind farms on balance sheet. Balance sheet financing is perceived as the easiest and cheapest way of obtaining funds – and there is always the possibility of re-financing the wind farms once they are operating satisfactorily.

When considering future re-financing, sponsors should be aware of the need for integration of project documents and financing documents. In non-recourse and limited recourse financing, all rights according to project contracts such as the PPA are typically assigned to the lenders for collateral purposes, i.e. to secure the performance of the borrower under the loan agreement. The counterparty to each contract will be asked to consent to the assignment including terms correcting any material conflicts or issues that the lenders have identified. Such integration and assignment might create problems and lead to re-negotiation of central contracts [7].

Compared to utilities, sponsors in the form of limited partnerships represent special challenges seen from a project financier's point of view. Contrary to industrial sponsors, limited partnerships cannot participate in the sharing of risks. Equity is raised through the sale of shares of ownership to thousands of private investors, and apart from the initial equity contribution no additional support can be expected from this type of sponsor.

A well-known kind of limited partnership is the German 'Kommanditgesellschaft' (KG) incorporating thousands of private investors taking advantage of a tax credit for limited partners investing in renewable energy projects. With the support of fixed energy tariffs and KfW-funding at favourable rates, KG investors and local banks have provided financing for thousands of MW of onshore wind farm capacity in Germany. Years of experience have presumably made lenders comfortable with the risks that characterise onshore wind farms both during construction and operation.

To the best of our knowledge, this is not the case for offshore wind farms. Banks - in Germany and elsewhere - seem very reluctant to take on offshore construction risk. Lack of sufficient mitigation of construction risk - e.g. in connection with limited partnerships - can be a deal breaker.

### **Contractual commitments**

In addition to sponsor support, suppliers will presumably be asked to take on a considerable part of the risks associated with an offshore wind farm. Further to a fixed cost and date-certain turnkey contract, investors and lenders will require contract bonds and/or corporate guarantees, long-term O&M agreements and warranty packages.

For onshore projects, the wind turbines make up some 75 per cent of the total costs. Turbine suppliers are therefore willing to act as turnkey contractors. Due to expensive foundations and electrical work, the turbines account for a much smaller part of the total investment in an offshore wind farm. Therefore, turbine suppliers seem less inclined to take on offshore turn-key responsibility.

EKF has experienced some difficulty in obtaining an acceptable contract structure for offshore wind farms. A clear apportionment of responsibility on the supplier side is imperative. Therefore, lenders are reluctant to finance projects involving a set of separate contracts for the supply of turbines, foundations and electrical work etc. A turnkey contract entered into with a consortium of suppliers is, in principle, acceptable to lenders - provided all parties in the consortium accept joint and several liability. However, suppliers and contractors seem reluctant to accept this requirement.

Once a turnkey contractor has been appointed, he will be asked to provide a number of guarantees etc. Despite the value of risk sharing, it is important to note that this 'manoeuvre' does not settle the absolute risk; it merely transforms project risk into corporate risk.

Based on an evaluation of the financial capacity of the contractor, the corporate risk of a specific transaction is likely to be acceptable. However, the long-term consequences of the provision of bonds and guarantees should also be taken into consideration.

In the course of time contractors sign many contracts. The responsibilities resulting from these contracts might turn into a financial burden, and in that way interdependence among projects will arise: The failure of one project - and the additional costs to be borne by the contractor - might make the contractor unable to meet his obligations in connection with other projects ('domino effect'). This is an issue which creates great concern within the financial community.

## Insurance cover

In addition to the above, risk mitigation through wind farm insurance both during construction and operation is to be considered. Unfortunately, restrictions on insurance cover for offshore wind projects are likely to prevail. This is due to the risky construction process and the considerable technology risks characterising offshore wind farms.

As projects and turbines grow larger, it becomes increasingly difficult to secure appropriate insurance cover for 'defective parts' and any consequential losses. Some insurance companies will only consider second generation turbines for offshore use.

It is difficult and time consuming to solve technology or infrastructure problems offshore. To give an example, the cost of repairing a recent defect in the sea cable between Sweden and Denmark (the island of Bornholm) was estimated at several million Danish Kroner, and experience shows that such repairs take up to 30 days – even under good weather conditions.

A major concern for insurers relates to the potential business interruption losses due to damages to cables and substations. It is therefore relevant to ask whether losses owing to large time-consuming repairs are covered when taking out a business interruption policy? Brokers indicate that insurance companies can be expected to introduce clauses limiting their liability in certain cases e.g. by introducing waiting periods of 30 days compared to 7 days onshore.

Further to the above, lenders will be interested in knowing whether the term of insurance matches the term of the loan? Brokers assume that no long-term policies will be available. A maximum term of three years can probably be expected.

Offshore wind farm experience is still quite limited within the insurance industry, and most of the wind farms which have obtained insurance cover so far are newly established and/or relatively small. These limitations aside, it is relevant to look into the existing track record:

Experience from one specific portfolio of offshore wind farms shows that more than  $\frac{3}{4}$  of all insurance claims were related to cable-laying or the dragging of anchors. At the same time, relatively few losses due to events such as collision, lightning, fire and storm have been registered. The number and type of claims during the entire lifetime of offshore wind farms remain to be seen.

From an insurer's point of view, the complex construction process and the rapid technological development characterising offshore wind farms represent new classes of risk. However, a number of insurance companies are experienced in offshore oil and gas and cable-laying risks, and they are gradually becoming familiar with the specifics of offshore wind farming.

Brokers indicate that insurance capacity is available. In order to achieve optimum insurance terms and conditions, it is important to prove to insurers that all risks have been properly identified, analysed and managed. In general, a well planned strategy is needed; only by way of a technical risk management approach and a close co-operation between developers, contactors, brokers and insurers can sufficient insurance cover be obtained.

The actual availability and market standard of offshore wind farm insurance is yet to be fully discovered. Still, there are strong indications of incomplete cover leaving risks to be borne by other parties or (partly) mitigated through the provision of reserves etc.

## Managing unmitigated risk

As described above, risk sharing is of great importance when trying to make a project eligible for project financing.

Completion risk and other project related risks can be mitigated, at least in part. However, risk mitigation through sponsor support and contractual commitments on the part of the suppliers does not mean that certain risks are settled for the entire lifetime of the financing. The derived risks such as the technological and financial capacity of sponsors and suppliers will be carefully considered by any lender.

Due to restricted insurance cover, short term O&M agreements and warranty packages etc., certain risks will presumably be left unmitigated for the lenders to manage.

Based on our experience, it seems relevant to raise and discuss the following question: How is the financial community likely to deal with unmitigated risk? For onshore projects, some banks seem to accept unmitigated risks which they cannot control. Will this also be the case for offshore?

In relation to the above, it should be acknowledged that local or regional market standards might differ from international market standards. One example is Germany where political support has made wind projects financially viable. Many German onshore wind farms have already been project financed. From the point of view of a foreign bank or ECA, German banks are likely to accept low pricing as well as unmitigated risks.

For offshore wind farms the requirements put forward by German and other European banks seem to be much stricter. All risks are thoroughly assessed, and so far we have experienced no or very limited appetite for unmitigated risk - especially during construction. The lack of an industrial sponsor or sufficient risk sharing with manufacturers and insurers are potential deal breakers.

## Conclusion

It will presumably be a while before an offshore track record providing sufficient comfort to project financiers has been established. In the near future, offshore wind financing is therefore likely to require the support of strong sponsors and contractors

In this paper, a number of questions have been raised and discussed. They are questions which EKF has come across when looking into some of the first offshore wind farms to be project financed. Due to lack of experience with project financing of off-shore wind farms, few clear answers are available at the moment. The provision of further knowledge awaits the actual execution of specific projects.

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